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PEACH GROWING IN ALABAMA

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PEACH GROWING IN ALABAMA

Peaches can be grown with success in practically all parts of Alabama, certain sections being particularly well adapted to their culture. The average fruit grown in this State has fine flavor and a good appearance, and is of exceptionally good shipping quality; the latter point being most important, as it is a difficult fruit to handle.

Few fruit bearing plants are less particular about the soil in which they grow, and few will yield so much fruit in proportion to the land they occupy. Peaches will grow and bear heavy crops with very little attention, and yet without intelligent care, they are sure to prove disappointing. The work of caring for the trees is comparatively simple and easily learned. The development of new varieties has made the crop much more certain and the introduction of new methods of spraying has made the control of insects and fungi successful.

The outlook for peach growing in Alabama, has never been better than it is at present. The soils and weather conditions are as favorable as they were years ago, except some of the land has been neglected and is in need of fertilization. Several through lines of railroads give an outlet to the best Northern markets. The old markets are consuming more fruit each year, and new markets are being developed in the rapidly growing towns and cities. For the past few years first class peaches have brought fancy prices. The number of trees in some sections have greatly decreased because of poor shipping facilities, fungous diseases, and insect pests. With proper culture, spraying, etc., no other State offers a better opportunity for the peach growing industry.

LOCATION.

For home use, one can have fair success on soils of diverse character, but for commercial use, careful attention must be given to the selection of a site favorable to the crop, and having the best advantages in shipping, marketing, etc. In choosing a location one must have in mind the ultimate de-

velopment of the orchard. If only a limited amount is to be grown, for local markets or express shipments, it is best to locate convenient to a good market, or preferably, near several small ones.

Site.

After the locality has been determined, a proper site for the orchard must be selected, and to do this, a number of things must be considered. The higher land should be selected rather than the low bottom, and some parts of the farm may be better suited than others. Good air drainage is a most important factor to be considered, as the fruit is not as likely to be injured by frost when such is secured. By selecting a site elevated above the surrounding land, good air drainage is secured, with free circulation of air in the summer, keeping the brown rot reduced and producing fruit of high color.

Never select a site exposed to strong winds, as the trees are blown about until they become loosened in the soil; spraying is difficult, trees loaded with fruit are apt to be broken and the fruit shaken from the trees before it has matured.

The soil is also an important factor in selecting the site. The soil best suited for the peach is a well drained sandy loam with a good porous sub-soil. Any of the loams may be used. Soils containing stiff clay or coarse sand for any depth should be avoided.

Preparation of the Land.

The preparation of the land for planting should be thoroughly done, as without this trees will start off poorly. The preparation of the land should be made as thorough for peaches as for the cotton or truck crop. If the trees are to be planted in the spring, the ground should be plowed as early as possible, so as to conserve moisture. Late plowing tends to dry out the soil. For fall planting, the land may be sown in cowpeas the summer previous. All large stones should be picked up and carted off. All stumps should be pulled out of the ground and burned. Any other litter that would hinder the growth of the orchard, should be removed.

Selection of Trees.

Nurserymen grade trees according to their caliper (diameter) and height. It is best to select trees graded by caliper, as in many cases they may be simply a long whip, and of very small caliper. Where the tree is to be cut back to the proper height, there is less waste of growth. In selecting the trees, those of medium size, either one year "dormant" or first class "June buds" are preferable. June buds may be secured from four to five feet in height, or from 7/16 to 9/16 inches caliper, which are excellent for setting.

Trees are graded as follows:

Peach — Height in ft.
One year: 6-8, 5-6, 4-5, 3-4, 2-3, 1-2.
Caliper in inches
¾ and up, ⅝-¾, 9/16-⅝, ½-9/16,, 7/16-½ ⅜-7/16.

Peach — Height in ft.
June Buds: 5-6, 4-5, 3-4, 2-3, 1½-2, 1-1½, ½-1.
Caliper in inches
⅝-¾, 9/16-⅝, ½-9/16, 7/16-½, ⅜-7/16.

It is usually best to patronize the local nurserymen, as they generally handle the varieties that are best adapted to local conditions. In case the local dealer does not handle the varieties desired, it is best to order from a distance, rather than accept undesirable stock. It is an advantage, in purchasing trees from the local nursery, to be able to inspect them before purchasing. Again, one is less apt to introduce injurious insects and diseases that are uncommon to the neighborhood. The home nurseryman in order to continue his business must supply trees as represented.

Planting.

There are two seasons for planting orchards, namely, in the fall and spring. Both have their advantages and disadvantages. The trees planted in the fall have a better chance to become established in the soil, ready for growth in the spring; the roots that have been broken having calloused. The greatest disadvantage of planting in the fall is that such trees are apt to

be blown and rocked by the winter winds until they become loosened in the ground. This can be remedied however, by going through the orchard in the early spring, and pressing the soil about the trees.

Trees planted in the spring, have less chance to become established, and if the season is dry, there is a greater risk of losing them.

In planting the trees, the hole should be dug large enough to allow the trees to be planted without crowding any of the roots. The sub-soil should be well loosened and the tree placed in the hole about one inch deeper than it was in the nursery. All broken and bruised roots should be carefully removed and a search should be made for borers. This may save much trouble later. The bottom of the hole should be filled with good soil, then set in the trees, and fill the hole with soil, and pack it firmly with the heel. On soils that are poor, manure should be used. A splendid method is to dig the hole for the trees and then fill them with manure, leaving them until two or three good rains have fallen. The fertilizing material is thus leached out and carried into the soil. When ready to plant, the manure is forked out, and the trees put in place, and the manure mixed with the soil about the trees. When manure is not obtainable, the trees are planted, placing good soil in the bottom of the holes, and applying commercial fertilizers in early spring, about the time when the trees are budding out.

Laying Off the Orchard.

There are several ways of laying off an orchard, viz.: in squares, triangles, and in rows running parallel with the terraces. In most cases squares 18x18 feet are the best, as cultivation and spraying operations are carried on much easier. The most satisfactory way is to have the orchard in as regular form as it can be made, on the site selected. The outside rows should not be crowded against the fence, making it impossible to get around the trees in these rows to cultivate and spray them. Mixed planting is generally unsuccessful. In such cases, the culture for one fruit is radically different from that required by the other, for example, the apple planted with the peach. Peaches and plums are in the same class, but plums

rot so much quicker than peaches, they are apt to be a disadvantage to the peaches when planted with them.

It is rather a difficult problem to make the orchard rows straight on rolling ground. An orchard with straight rows is much more attractive and satisfactory than one irregularly planted. The time devoted to lining up the rows will be repaid during the life of the orchard.

The first step is to establish a base line along one side of the proposed orchard, preferably on the longer side. If the field is to be set in squares, another line should be run at right angles to this base line, starting at the corner of the field where the first tree is to stand. The direction of this line may be established by the use of a carpenter's square on three stakes, one at the corner, another along the base line, and another along the side line. Good, strong stakes should be driven in the ground where the trees are to be planted on the base and side lines. A wire or cord may be stretched across the field parallel to the base line, and this will indicate the position of the second row, and this process is continued until the entire field has been laid off. Conspicuous tags should be tied to the wire at intervals equal to the distances apart which the trees are to be planted in the row.

Distance between the trees:—The proper distance between the trees, depends upon their ultimate size, variety, soil, location, and kind of treatment they are to be given. With good treatment and rich soils, some of the larger growing varieties should be planted twenty to twenty-four feet apart, while on the poorer land sixteen feet apart will be sufficient. Commercial orchards require a greater distance between the trees than for those in a home orchard, as more space is required in the former for the use of machinery in spraying and cultivating. It is best in all cases to give the trees plenty of room, as a higher grade of fruit, and larger crops are borne on the individual trees if they are not crowded. The best distance is 18 ft x 18 ft. or 18 ft. x 20 ft. apart. The first distance will give 134 trees per acre, and the latter 121 trees per acre.

Fertilizers.

Peach trees will generally make a satisfactory growth the first year, if the soil has been well prepared, the trees planted

early, and given good culture. If the land is poorly prepared and the weeds are allowed to grow between the young trees, very little growth is to be expected. It is a bad practice to plant trees on poor land, and then try to build that land up. It is far more satisfactory to turn under a few crops of cow peas or other organic material before planting the peach trees. However, with a moderately poor soil, a successful orchard may be produced, with proper management and fertilization. For soils that will produce a fair crop of corn ,the following formulae are recommended at the rate of 3 lbs. for one year old trees, and increased 1 lb. for each year until the seventh year, which will give a full grown tree eight to ten pounds:

Acid Phosphate 14%	1060 lbs.
C. S. M.	580 lbs.
Muriate of Potash	360 lbs.
Total	2000 lbs.

Or the following:

Acid Phosphate 16%	925 lbs.
C. S. M.	580 lbs.
Muriate of Potash	360 lbs.
	1865 lbs.
Soil or sand	135 lbs.
Total	2000 lbs.

The materials for the above formulae can be secured and mixed at home, thus saving the cost of having them mixed or paying freight on sand or soil. The mixing can be done by spreading out the different materials on the barn floor. All lumps should be broken up with a shovel, and the pile should be turned several times. With a little care, the pile can be evenly mixed, and this work can be done on rainy days when the farm hands have spare time.

The method of applying the fertilizer consists of putting the desired amounts about the trees out as far as the branches extend, and care being taken not to spread any of the fertilizer in a zone of two feet immediately around the trunk. Where cowpeas or clover are grown between the trees, these

will maintain the fertility of the soil on that space. With the above fertilization of the trees, and with the cultivation of the legumes mentioned, the trees will get the full benefit of the fertilizers applied.

A cover crop of rye, vetch, or clover should be used to hold the soil during the winter rains.

Liming the Soil.

A large proportion of the soils of the State are acid, and require an application of lime. The blue litmus test is generally sufficient to determine whether or not soils are acid. Either the air slaked or the ground lime rock, may be used. Soils that are not apt to leach badly may have a liberal application, and may not require to be limed again for several years. Soils of a sandy nature, and which leach easily should be limed frequently. Two or three tons per acre is considered a liberal application. It is a good practice to use 20 to 30 bushels per acre each spring, especially when green crops are being turned under. Lime corrects acidity and aids the soil in decomposing organic material in it.

Pruning.

Of all our orchard trees, the peach stands in greatest need of careful and regular pruning. The pruning of the peach should be practiced every winter, and it should be cut back more severely than any other fruit tree. A study of the habit of growth of the peach, makes this statement more emphatic. The fruit buds of the apple or pear are mostly borne on old, short spurs, attached to the older limbs. The fruit spurs of the apple and pear lengthen but little each year and the fruit is found for the most part on the body of the tree instead of on the new growth at the extremities of the branches. On the contrary, the fruit buds of the peach, are borne chiefly on the long whips of new growth, which is most abundant at the extremity of the branches. In order to secure an abundant crop of peaches, it is necessary to so treat the trees, as to secure abundant new wood growth, the year before the peach crop is expected.

PLATE I. A one-year-old tree showing normal growth and result of heading low. Photo taken August 1st, 1911.

Forming the Head.—The main thing in view is to secure a tree that is well shaped, one having a good open head, so as to allow plenty of air and sunlight about the branches and facilitate the operations of spraying and harvesting. Much of the success in pruning, depends on getting the trees started right the first year. When the young tree is planted in the orchard it should be stripped of all its limbs, and cut back 18 to 24 inches above the ground, depending upon the size of the tree. Large trees should not be cut back as far as small ones. If the trees are large and well branched, the branches should be cut to three inch stubs, as the buds on the branches are usually better developed than on the trunk, and they make a better growth. Disbudding is necessary if the best shaped trees are desired. Frequently more shoots are formed than are necessary, and if rubbed off at the proper time, will throw the growth to the rest of the tree where it is needed. For an ideal tree three shoots should be allowed to grow from 3 to 6 inches from each other, and in such a way that they will form equal tri-

angles about the trunk if viewed from above. A crotched head should be avoided in the peach tree as with all other trees. The three shoots should be shortened back at the close of the first season to about one foot in length, and during the next season, they should be allowed to divide into three or four branches. The same heading-back and multiplication of branches should take place the third season. Thus where such a framework of branches has developed from the main branches of the tree, which are not more than 18 to 24 inches from the ground, it can be readily seen what an advantage has been taken for the spraying and gathering of the fruit.

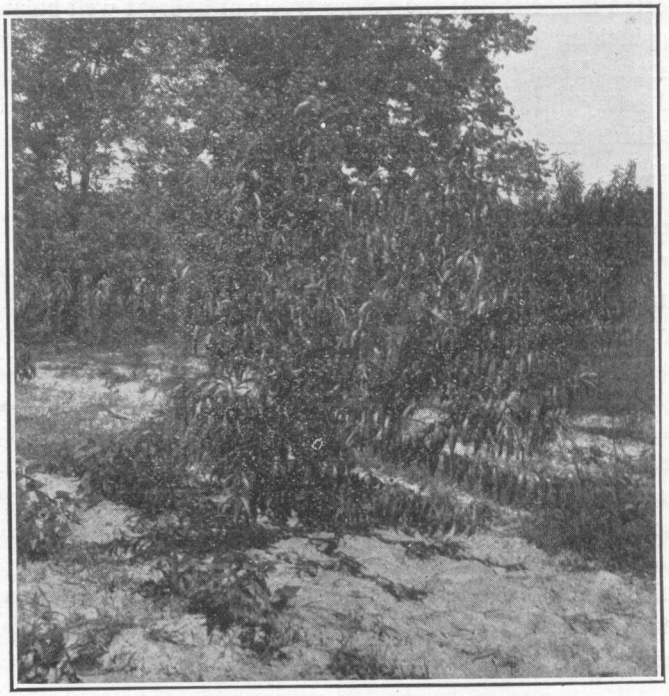


PLATE II. A two-year-old tree, taken August 1st, 1911.

Keep the pruning knives in the best of condition. Dull knives make ragged cuts which heal very slowly, if at all. Again, such knives cause a considerable waste of energy on the part of the operator. All cut surfaces over one-half inch in

diameter should be painted over with white lead to protect the wound from the action of the weather and injury from insects.

Much of the labor required in pruning during the winter can be avoided by judicious summer pruning. The soft young suckers which tend to fill up the centers of the trees can be easily rubbed off if done at the right time. Remember that surplus wood requires just so much more time to spray properly and extra spray material.

Young trees can be more uniformly shaped if disbudding is practiced. After the trees have been set and growth begins in the spring, they should be gone over and all shoots not needed in forming the head of the tree should be rubbed off. It often happens that the young tree can be kept well balanced by pinching out the terminal buds of the rapidly growing shoots. Young trees on rich soils often grow very rapidly, and many times become top heavy. This can be prevented by pinching out the terminal buds during the growing season. Pinching the terminal buds induces branching and there will be less waste of wood at the time of dormant pruning.

During the third and fourth years, the pruning does not differ materially from that already described, and care should be taken not to allow the latteral branches to become too thick, nor should they be allowed to fill up the center of the tree, bearing in mind that a low, open, spreading tree is the ideal desired. This subsequent pruning should consist of heading in the main branches and vigorous shoots from a half to two-thirds of their length. Always head back to a good latteral whenever possible, and so prevent the growth of surplus shoots. In any case short branches should be encouraged to grow low down on the trunk, and also branches to provide protection from the sun. Nothing aids more in growing well matured, well developed and highly colored fruits than good pruning.

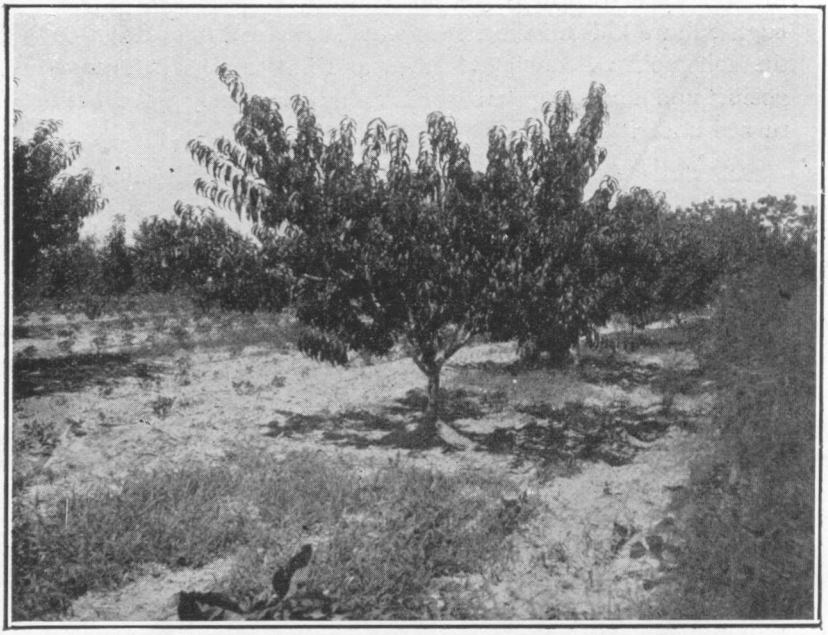


PLATE III. A four-year-old Carman tree, well shaped and vigorous. Note the mound of soil at base of tree for treating borers. Photo taken August 1st, 1911, in Experiment Station Orchard.

After-care of the Orchard.

It is very essential to take the very best possible care of the young trees. They should be kept thrifty and healthy, and all necessary care given them to conserve the moisture and plant food in the soil. The latter can only be accomplished through systematic cultivation. Different soils and environment will necessarily change the methods practiced. Early in the spring, as soon as the soil will permit, it should be stirred six to eight inches deep, thus, if the trees have been planted as deeply as they should, plowing this depth will cause them to produce a deep root system which will not be injured so quickly by freezing or drought. After this plowing the fertilizer should be applied and worked in with a disc harrow or cultivator. Frequent cultivations should be given with the cultivator or disc harrow, running deep enough to form a good soil mulch, and prevent subsequent baking or crusting of the sur-

face, and prevent loss of soil moisture by evaporation. Thorough culture kills all the weeds which are a constant drain on the soil moisture and plant food, and also assists in decomposing and liberating any plant food which may have been turned under.

Cultivation should cease after August 1st, in order that the trees will have an opportunity to mature and harden the season's growth and buds for winter. Buds are often severely injured by cold by the growing continuing too long in the season. At the last cultivation, a cover crop may be sown. Cowpeas may be sown in July, which will greatly aid in supplying the soil with nitrogen and humus. The cover crop will absorb and maintain much plant food that is likely to be washed out of the soil, and in the spring, when turned under, greatly improves the mechanical condition of the soil. Clovers and vetches may be used also, as they are nitrogen-producing plants. If the soil is not in need of nitrogen, oats, rye, etc., may be used, but should never be allowed to mature, as this will occur too late to begin proper cultivation. Any crop that requires hoe and plow culture, may be planted in the orchard, and reduce the cost of caring for it. Crops should not be planted closer to the trees than three to four feet from the end of the branches, and when the orchard is inter-cropped, more care must be taken to maintain the fertility of the soil. It is not advisable to grow grain crops in the orchard, as they draw heavy on the moisture and plant food. If the soil is liable to wash, clover sod may be grown between the rows, with a space left along the line of the row, to allow space for cultivation. Hills too steep to cultivate, may be mulched with straw, but such lands should be avoided if possible. Straw mulch is not to be recommended, as it encourages a surface root system, which will cause injury to the trees by drought.

In cultivating the orchard, care should be taken to protect the trees from injury by putting pieces of leather on the ends of the single-trees, and by using low hames, also by placing a muzzle on the horses to prevent their nipping the young shoots.

All weeds, grass and other litter that might harbor mice, should be removed. Where rabbits bother by chewing the bark, the trees should be wrapped with tar paper or wire netting.

Profits.

The Department has received numerous inquiries concerning the cost of producing a crate of peaches in Alabama orchards. Data has not been received from many of the larger growers but the following figures are based on actual records of expense as recorded at Auburn:

One winter spraying and four summer sprayings per tree	$ .10
Fertilizers, per tree	.10
Pruning	.04
Interest on tools, wagons, etc., 8 per cent.	.12
Interest on land	.23
Picking and grading one crate	.10
Total	.69
Average price per crate	$2.00
Average yield per tree, one crate—cost	.69
Net return	$1.31

With 134 thrifty trees to the acre in bearing this would give a total income from that acre of $175.54. This figure, however, is quite relative as the same varieties on different soils and managed by different men will vary considerably. However, with the best of care this figure is conservative.

Insects.

The principal insects attacking the peach are the plum curculio, San Jose scale, peach borer, lesser peach borer, West Indian peach scale, black peach aphis, fruit tree bark beetle and nematode root gall.

The plum curculio is the insect which causes "wormy peaches" and is recognized as a small grub in the matured peach. This insect can be controlled by the use of the following spray formula, which is further described in Alabama Bulletin No. 152.

2 lbs. arsenate of lead.
3 lbs. pure rock lime.
50 gallons water.

Mix the arsenate of lead into paste in a bucket before adding to the solution. Slowly slake three pounds of rock lime in

water, and strain both the mixtures into fifty gallons of water. Apply this mixture just as the "shucks" are falling.

The fact that over 90 per cent. of the injury by brown rot is directly responsible to the punctures of the plum curculio, makes it imperative for the peach grower to give his trees a thorough application of this mixture.

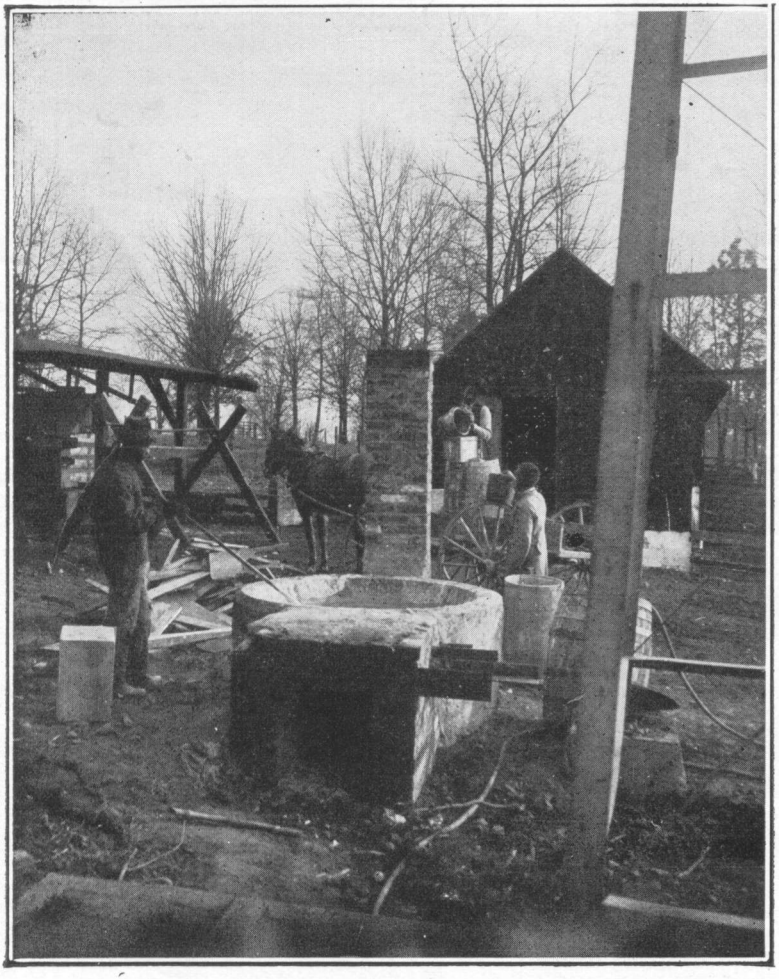


PLATE IV. Showing equipment for making Lime-Sulfur mixture, also straining the mixture into spray barrel.

The second spraying should consist of self-boiled lime-sulfur described below, with two pounds of arsenate of lead added to it. This gives us a combined insecticide and fungicide, protecting the peaches against the attack of the curculio, not entirely controlled by the first spraying.

San Jose scale and West Indian peach scale can be controlled by the use of lime and sulfur wash, as described in Alabama bulletin No. 144. The formula and a brief description of its preparation follows:

15 lbs. pure rock lime.
15 lbs. flour or flowers of sulfur.
50 gallons water.

In case 90 per cent. pure lime cannot be secured, as much as twenty pounds should be used to make up for the impurities. In preparing this wash the lime and sulfur is boiled in a kettle over a fire from 30 to 40 minutes, forming a chemical combination which is very caustic, and can only be applied to the trees when in a dormant condition. If only one spraying through the winter is to be given this should be applied about a week or two before the buds open in the spring.

Black peach aphis can be controlled by the use of tobacco decoctions. Fruit tree bark beetles, and nematodes are only controlled by digging up and burning the infested trees.

The peach tree borer can be controlled by banking the trees with soil the first of July to the height of eight or ten inches, about the trunks. [See Plate III., Page 121.] The soil should be packed thoroughly to hold it in place, and in this manner the moths find it impossible to make their way to the trunk or roots. The moths lay their eggs from July to October, and by having the mounds, many moths are prevented from coming out, and those that get out, are compelled to lay their eggs above the mound. In this way the small borers are easily found. The orchard should be gone over in November, the mounds leveled, and all the borers dug out with a knife. It is essential that this operation be thoroughly done. In the Experiment Station orchard last year, trees not mounded contained from two to ten borers, while scarcely a borer could be found in the trees that were mounded. All the borers on the mounded trees were so high up the trunks that they were easy to detect and destroy.

Diseases.

The principal diseases of the peach are: *Brown rot, leaf curl, milldew, shot hole fungus* and *scab*. These diseases can be controlled by the use of self-boiled lime-sulfur wash, which is described in Alabama bulletin No. 152, and is briefly given below. The formula consists of the following:

8 lbs. pure rock lime.

8 lbs. flour or flowers of sulfur.

50 gallons water.

It will be noted that the ingredients of this wash are the same as used for the winter wash, but only one-half the quantities of lime and sulfur are required. Another point which should be noted, is the fact that in preparing the self-boiled lime-sulfur, no fire is used under the kettle in which the mixture is being prepared. In allowing the lime to furnish the heat, and in reducing the time of boiling to ten minutes, a chemical combination is formed much less caustic than the winter wash, and one which can be applied with safety to the trees in foliage.

To prepare the mixture place eight pounds of lime in four to six gallons of water, the latter brought up to a temperature of 190 to 200 degrees. As soon as the lime begins to slake, pour in the sulfur, which has been freed from all lumps and cover the barrel or kettle with a piece of heavy matting or burlap. Watch the mixture at intervals to see that it does not become too dry. If this happens add a little water. Allow the boiling to continue ten minutes. Add cold water to stop boiling and strain the mixture through a wire gauze, having twenty meshes to the inch, into the spray barrel. Remember that no heat is used other than that generated by the slaking of the lime.

The first application of the above mixture should have two pounds of arsenate of lead mixed with it, to form a combined fungicide and insecticide, and this wash should be sprayed on the trees two to three weeks later than the application of arsenate of lead, or three weeks later than the shucks have fallen.

The third application should consist of self-boiled lime-sulfur alone, and should follow about three to four weeks later than the second application.

The trees in the Station orchard have been very thoroughly

sprayed the past few years, and there has been little trouble with either "wormy" or "rotten fruit." Again the fruit has been exceptionally large, well formed, highly colored, and of the very best quality. Fifty gallons of the summer wash will cover about thirty-five to forty, six-year-old trees. In a wet season it may be necessary to spray four times while the crop is maturing. It is absolutely a waste of time to apply the self-boiled lime-sulfur unless the applications are made as soon as the fruit begins to form, with arsenate of lead, followed by the self-boiled lime-sulfur, at intervals of two or three weeks.

Thinning.

Some varieties tend to overbear every season in spite of the large number of fruits which drop in May. The average peach grower never practices thinning and many times secures a crop of undersized fruit poor both in flavor and color when with judicious thinning, fruit of much superior quality could be obtained. It requires considerable nerve to pull the peaches from the tree but where they are distributed thicker than 4 to 6 inches on the branch the intermediate fruits should be pulled. Where the trees are thinned there seems to be a tendency for them to form more fruit buds than where not thinned. Judicious pruning in the winter will correct the tendency of trees to overbear.

Harvesting and Marketing.

The gathering and marketing of peaches is undoubtedly the most neglected and at the same time the most important phase of the industry. There is more complaint among Alabama peach growers concerning their inability to place their fruit on the market at paying prices than upon any other feature of the business. Gathering the fruit at the right time and experience in grading and packing are essential features of success. Again it requires tact and considerable business ability to place the fruit in the right market. Many failures have been due to the fact that the shipments from certain points have been too small to attract "big" buyers. When a grower advertises the fact that he will have 50 or 100 cars of a certain variety a certain week he will not pass unnoticed. Growers owning from 10 to 50 acres should organize and advertise in the name of that organi-

zation. Such an organization to be effective should have its officers and set of by-laws. Its members should be instructed to grow certain varieties that the combined output of those varieties will be sufficient to attract the larger buyers.

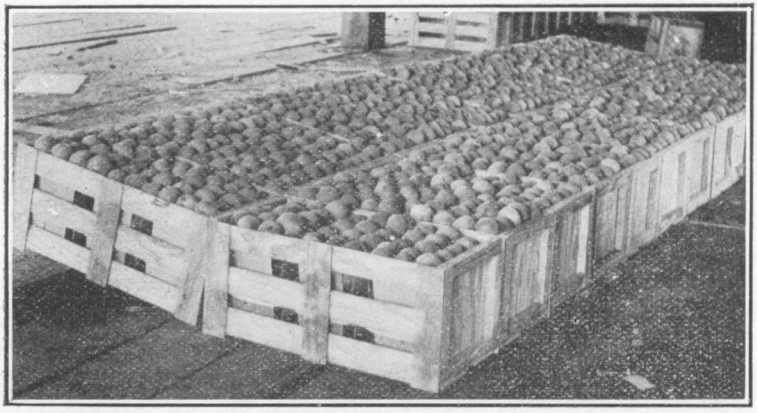


PLATE V. An Alabama Product.

There is just one stage in the development of the peach when it should be picked for shipment and with many commercial varieties this stage is limited to 24 hours. The greater portion of the southern peaches reach the northern market in mediocre condition resulting from their being gathered when immature. Such fruit is undersized, poorly colored and without its characteristic flavor or keeping qualities. Again there is danger of pulling the fruit when over ripe. The under side of the peach or that portion away from the sun is indicative of the fruits' actual condition. When the green color of the under side has changed to a creamy white the peach is ready for gathering. The few days preceding the maturing of the peach are very important ones to the grower. At this time the peach increases in size between 15 and 20 per cent. This increase in size, in addition to the increase in net returns for mature peaches, is a factor not to be slighted. All ripe fruit should be gathered at a picking and only an expert foreman can judge the efficiency of a gang of six pickers. The weather conditions often cause anxiety at the time of harvesting. Wet weather tends to soften the fruits and consequently they must be picked earlier at such

a time. Careless picking ruins many a grower. The fruits must be handled carefully. Do not allow them to be dropped into the baskets or allow them to be poured from one basket to another.

Packing.

At the packing house the fruit should be culled, grading it according to size at the same time. Imperfect fruit means those which are even slightly bruised, curculio stung, showing slightest signs of decay, and deformed or split slightly along the suture. It requires much experience and skill to grade the fruit properly. The packers should also be required to cull the fruit as the graders often allow inferior fruit to remain unnoticed. Much of the culled fruit can be regraded and shipped as culls, canned, or evaporated.

Peaches are generally packed in the Georgia six-carrier crate which holds 7-8 of a bushel. Each carrier or "cup" should be packed uniformly. The colored side of each peach should show to the best advantage. The crate should be full enough to require slight pressure on the top to fasten it. A competent inspector should watch every layer placed in the cups.

All crates should be labelled according to the grade of fruit they contain. Trouble may result from careless work here. It is rather difficult for all growers to decide on standards for grades. Each grower, or each organization, as the case may be, attempts some such standardization. Mr. Jones may put his Carmans out as "Extra Fancies" and Mr. Smith may do likewise yet the actual grade of the former's may be far superior to that of the latter. If both shipments reach the same market the commission men spend little time in deciding the merits of the case and Mr. Jones gets the order the next season. However, Mr. Smith may have been very conscientious in his grading. The best fruit one year may not reach that standard the next year and where a standard has been set, maintain it, even if it should be necessary to send out crates labelled "seconds" one or two seasons. Honesty counts here as elewhere.

Serious losses are often caused by the shipment reaching a so-called "glutted" market. The majority of the large growers seem to think that New York, Philadelphia and Chicago need

all the peaches. As a result prices in those cities very often hardly pay the freight, while smaller cities are hungry for peaches and willing to pay good prices for them.

By-Products.

Some of the largest growers in Alabama have installed large canning factories in their orchards and find them very profitable investments. Canning the peaches prevents loss from poor shipping facilities at the time the crop is moving and furnishes employment for experts and laborers should the market "go wrong." Every farmer who owns peach trees should have a home canning outfit. These can be purchased from $5.00 up and one season's trial with one will prove their value. Having a goodly supply of canned peaches in mid-winter sounds better than feeding surplus peaches to the hogs. Farmers' Bulletin No. 426 gives instruction concerning the operation of canning and demonstrations have been conducted by the Horticultural Department at Auburn during the farmer's institutes and also in co-operation with the Extension Department. There are a number of reliable firms handling home canning outfits and the names of these can easily be secured by referring to the advertisements in the various horticultural journals. Some of the oufits familiar to the writers and which give very good satisfaction are as follows:

Tharpe Hardware Mfg. Co., Elkin, N. C.
Slemmer & Son, Goldsboro, Md.
Home Canner Co., Chattanooga, Tenn.
The Raney Canner Co., Chapel Hill, N. C.
Reeves and Son, Collinsville, Ala.
Dixie Hardware Mfg Co., Elkin, N. C.
F. S. Stahl Mfg. Co., Quincy, Illinois.

Cans are supplied by many companies, a few given below:

E. F. Kirwin & Co., Baltimore, Md.
American Can Co., Atlanta, Ga.
Modern Canner Co., Chattanooga, Tenn.
F. S. Stahl Mfg. Co., Quincy, Illinois.

A Few Dont's.

Don't purchase trees from tree agents unless they and the companies they represent are well known.

Don't turn stock in the orchard.

Don't sow oats in the orchard.

Don't plant too many varieties in commercial orcharding.

Don't wait until the last minute to order crate material.

Don't allow the trees to suffer from insects and diseases as attention to spraying will control both.

Don't ship immature fruit.

Don't attempt pruning with cheap and dull knives.

Selection of Varieties.

The question of varieties is a most important one with the large grower. He can ill afford to plant varieties other than those given a fair trial in the vicinity of his proposed orchard. The description of varieties which follows is based entirely on notes taken at this Station for the past eight years and the dates of blooming, ripening, quality, etc., will only be relative in other portions of the State. There is generally a difference of two weeks between the ripening period of trees in the southern section of the State and those at the Station. In the northern section of the State the fruit will ripen about two weeks later than at Auburn.

The home orchard should contain varieties which will give a succession of fruit from May 15th to August 15th. Only those varieties should be selected which have either been tried in your particular vicinity or reported upon by Experiment Stations of the southern States.

The local market generally prefers freestone varieties, which can be used for home canning. Shipping varieties require durability to withstand long rail trips and they should have firm flesh and rather thick skin.

Notes on varieties tested at Auburn follow:

DESCRIPTION OF VARIETIES.

ALEXANDER.—Low spreading tree, vigorous grower; fruit small to medium; color pink on yellow ground; flesh white; quality rather poor; fair for home use; ripens May 30th to June 5th.

AMELIA.—An upright grower but shy bearer; fruit medium to

small; apex prominent and distinct; color yellow with splashes and dots of crimson; flesh yellow, red at pit, firm and rather coarse; quality fairly good; freestone; ripens August 2nd.

ANGEL.—Tree prolific; fruit medium size, round and slightly pointed; skin yellow washed with red; flesh white, sweet; freestone; ripens July 10th to 14th; for home use.

BEAUTY BLUSH.—Large upright tree, light foliage; heavy bearer; fruit medium to large; freestone; ripens June 30th to July 6th; recommended for home use.

BELLE—(Georgia Belle).—Tree of low spreading habit, vigorous grower, and very productive; foliage heavy; fruit very large; skin greenish white with splashes of carmine; flesh white, firm, flavor sweet; quality good; freestone; ripens July 1st to 10th; good shipper; highly recommended for home and market.

CARMAN.—Tree round and well shaped, vigorous and medium size; foliage heavy; fruit large, round and flattened at cavity; skin light yellow with crimson patches deepening to magenta in sun; flesh white, quality fine, freestone when fully ripe; the best for its season; excellent shipper; ripens June 1st to 10th; highly recommended for home and market.

CHAMPION.—Tree has spreading top, a heavy bearer; fruit round, large; skin greenish yellow—rose in sun; flesh greenish white, solid, sub-acid; fair quality; good for commercial or home use; ripens June 26th to July 6th.

CHINESE CLING.—Open, spreading and fairly vigorous tree; fruit slightly oblong, very large; skin straw colored, with deep red blush, striped and splashed; skin thin showing slight bruises; flesh white, reddish at pit, soft and tender; mild sub-acid, quality excellent; prolific; a good shipper, and also good for home use; ripens July 4th to 11th.

COBLERS INDIAN.—A fair peach of medium size, ripening July 15th to the 20th, but not recommended for this section.

DAWSON.—Tree slow growing, unproductive; fruit round, medium large; skin, upper half rich magenta in irregular splotches on crimson; lower half rich yellow; flesh yellow, flavor excellent, quality good; a poor shipper and not recommended for this section. Ripens June 15th.

ADMIRAL DEWEY.—Tree an upright grower; winter kills badly; prolific; fruit medium to large, conical in shape; skin rough, red to yellow, flavor very good; quality fine; rots badly and a poor shipper; ripens June 10th to 15th.

EARLY CRAWFORD.—Tree vigorous with open top; fruit medium to large, round; skin yellow, reddish in sun, flesh yellow, reddish at pit, firm; freestone, quality good, shy bearer; ripens July 10th to 14th. Not recommended.

ELBERTA.—Tree vigorous, spreading, with heavy foliage; a good bearer; fruit large, skin yellow, rose tinted in sun; flesh yellow, firm and juicy, sub-acid; good quality, excellent for shipping and home use; a standard variety; ripens July 8th to 20th.

EMMA.—Tree of large upright form, very productive, but fruit rots and drops badly; fruit round, small; skin has tinge of pink on yellow ground; flesh yellow, sweet to sub-acid; quality fair; ripens July 15th to 25th, freestone, for home use.

EVERBEARING.—Not promising so far; ripens July 18th to 22nd.

FAMILY FAVORITE.—Tree vigorous, fruit ripens a day later than Champion, and resembles that fruit, being a little smaller, and

not as heavy a bearer; flavor sub-acid; fair quality; ships fairly well; recommended for home use; ripens July 2nd to the 8th.

FAME.—An upright growing tree; fruit medium size, freestone; yellow flesh; good quality; rots badly; for home use only; ripens July 18th.

FRANCES.—A large upright growing tree; fruit of medium size; skin magenta on yellow; flesh yellow, sweet; freestone; quality good; ripens July 15th to 19th.

GLOBE.—A well shaped, vigorous tree of medium size, not prolific; fruit medium to large, round; skin a yellowish green with pink blush; flesh yellow, firm; sub-acid; fair quality, ships well, but being unproductive is not recommended; ripens July 14th to 17th.

GOV. HOGG.—A large upright growing tree, fairly productive; foliage medium to heavy; fruit large, round; skin cream yellow with light crimson blush in sun; flesh cream yellow, pinkish near pit; slightly sub-acid; good quality; ripens June 22nd to 26th; too soft for shipment; recommended for home use.

GRAY.—Tree spreading, fairly productive; fruit large, flesh yellow; freestone; acid; ripens June 26th to July 8th; not recommended.

GREENSBORO.—Vigorous low spreading tree, with heavy foliage, and fairly productive; buds and wood hardy; fruit large, oblong, compressed; skin velvety, light yellow, pinkish about apex and along suture; flesh white, sweet and juicy; quality good; cracks badly; ripens at apex first, highly recommended for home use; ripens May 25th to June 1st.

HILEY (Early Belle).—A low spreading, fairly vigorous tree; a rather irregular bearer; fruit conical, medium to large; skin very light yellow, with crimson blush; flesh white, tinged with red near tip, fairly firm and juicy; sub-acid; quality very good, a good shipper; ripens June 21st to 30th; recommended for home or market.

HONEY (De Montigny).—Fruit medium size, oval compressed, suture deep, apex sharp recurved; skin whitish yellow; flesh creamy white, juicy and very sweet; freestone; ripens July 1st to 10th; recommended for South Alabama.

IMPERIAL (White Imperial).—Fruit medium to large, skin greenish yellow, washed with red; flesh white, sweet and juicy, flavor excellent; quality good; freestone; ripens July 10th to 14th.

INGOLD (Lady Ingold), (Stark).—Wood and buds tender; fruited in 1906, ripening July 2nd to July 5th; fruits were well colored, seventy-five per cent dropped from brown rot; color deep yellow with red cheek, showy; flesh yellow, red at pit, juicy and good; freestone.

LATE CRAWFORD (Crawford's Late).—Fruit of medium size, round; skin yellow with red cheek; flesh yellow, red at stone; tender, free; quality good; buds rather tender; only suitable to certain localities; a good shipper; ripens July 10th to 15th.

LEMON CLING (Kennedy's Carolina).—An upright growing tree with medium sized foliage; fruit medium, conical; apex very prominent; skin lemon yellow with pink blush; flesh yellowish white, juicy, sweet; quality excellent; ships fairly well; fairly productive; ripens July 17th to 26th.

MAMIE ROSS.—A low spreading tree of medium size, with heavy foliage and of medium productiveness; fruit large, round; skin thick, tenacious, light yellow, pinkish near apex; flesh yellow, sub-acid; quality good; home use, promising for some localities, particularly South Alabama; freestone; ripens May 28th to June 10th.

MATTHEWS (Matthews' Beauty).—Tree with large spreading top; vigorous; medium sized foliage and very productive; fruit medium to large, oval; skin greenish yellow with pink splash; flesh

yellow, firm, sub-acid; recommended for home use; a fair shipper; ripens July 6th to 14th.

MAYFLOWER.—A low spreading tree; productive, fruit medium sized, oval; apex pointed; surface velvety, dark red and evenly colored; flesh greenish white, juicy and soft, sub-acid; quality fair; clingstone; a good bearer and good shipper; valuable for its earliness; ripens May 15th to 20th.

McKINNEL.—An upright, rank growing tree with heavy foliage, very productive but very susceptible to rot; trees must be thoroughly sprayed to secure a crop; fruit conical, medium to large; apex small and sharp pointed; surface smooth, red to greenish yellow; flesh yellowish white, fine grained; flavor very good, juicy; quality very good; ripens May 25th to June 5th.

MOUNTAIN ROSE.—Tree vigorous with a spreading top and medium foliage; fruit medium sized, roundish; color white with red in sun; flesh white, slightly red at pit, juicy and sweet; freestone; productive; good for home use; ripens July 1st to the 9th.

OLDMIXON FREE.—Fruit small to medium sized; color white with red cheek; flesh white and red at pit; fair quality; good for home use only; ripens September 10th to 25th.

ONDERDONK (Onderdonk's Favorite).—Fruit medium sized; skin and flesh yellow; productive; freestone; ripens July 15th to 21st.

OVIEDA.—A spreading slender branched tree; fruit oval and small; color yellow, blushed with red—attractive; prolific; ripens July 3rd to the 15th. Home use; particularly the southern portion of the state.

PALLAS (Honeydew).—A medium sized peach; red tipped at base and apex with light yellow; flesh white, fine grained; freestone; ripens July 6th to 10th. A variety adapted to the southern portion of the state.

PEENTO (Chinese Flat).—Fruit medium sized, flattened at both ends; skin pale greenish white with mottling of red in sun; flesh light yellow, sweet and juicy; clingstone. This, like the other varieties of the Peento group, should only be planted in the extreme southern sections of the state, as they bloom so early; ripens June 30th to July 5th.

PICQUET (Picquet's Late).—A medium to large peach; color yellow with a red cheek; flesh yellow, rich, sweet and of good flavor; ripens July 28th to August 4th.

REEVES (Reeve's Favorite).—A round, medium sized peach; apex elongated—pointed; color yellow green with magneta in sun; flesh yellow, firm, sub-acid; quality rather poor; ripens July 12th to the 15th; prolific.

RIVERS (Early Rivers).—A very hardy spreading, vigorous tree; fruit medium to large, conical; surface smooth, white with dark crimson blush in sun; flesh white, firm, fine grained, juicy; very good quality. Too soft to ship; fairly productive and good for home use; ripens June 10th to the 20th.

SALWAY.—Fruit large, not attractive yet it ships well and ripens so late that it is very desirable; color yellow, mottled with brownish red; flesh yellow, firm, sub-acid; ripens July 30th to August 6th.

SIMMS.—An upright vigorous tree with heavy foliage; not prolific and rots badly; fruit of medium size, round; color yellow splashed with red stripes; bloom abundant; skin tough and thick; flesh yellow slightly juicy, sub-acid; quality good; freestone; ripens July 20th to 27th.

SLAPPEY.—Upright growing tree, foliage heavy, fairly productive; fruit medium to large, conical; apex elongated, slightly rounded; color bright orange yellow with red cheek; flesh yellow, mealy; qual-

ity very good; ripens June 19th to the 27th; recommended for commercial or home use.

SMOCK (Smock's Free).—An upright growing tree, not hardy, leaves, medium to large; rather productive; fruit medium in size, roundish; color yellow with red cheek; flesh yellow, dry; quality fair; rots badly; recommended for home use only; ripens July 2nd to 6th.

SNEED (Peeble's May Cling).—A large spreading tree bearing well when young; fruit medium in size, oval; color creamy white with red blush in sun; flesh white, juicy; semi-cling; quality poor; not recommended; ripens May 15th to June 2nd.

STINSON (Stinson's October).—Fruit large, oval; color creamy white; flesh white with pink veins; scabs badly in Station orchard; ripens October 4th to 8th.

SUSQUEHANNAH (Griffith Mammoth).—An upright medium sized hardy tree; not prolific; fruit large, oval; apex prominent point; surface smooth; color lemon yellow tinted in sun with magenta blush; skin thick, tenacious; flesh yellow, rather stringy, very good, sub-acid; freestone; ripens July 15th to the 20th.

TABER.—A large tree, upright, hardy, prolific, with medium sized leaves; fruit medium to large, round; surface yellow, crimson blush in places; flesh whitish yellow, juicy, sub-acid, quality fairly good; excellent for canning; ripens July 1st to the 15th.

THURBER.—A medium sized tree, low spreading; productive; fruit large; color creamy white, light crimson in sun; ots small red and numerous; flesh white, red at pit, juicy; freestone; quality very good; a good shipper; ripens July 15th to the 24th; recommended for home use.

TILLOTSON (Early Tillotson).—Fruit medium sized, white, practically covered with red; not prolific; ripens June 27th to July 6th.

TRIUMPH.—A strong tall growing tree, hardy, very prolific; fruit medium to large, conical; color yellow splashed with maroon; larger portion being covered with red; flesh bright yellow, red at pit; semi-cling but free when ripe; ripens June 3rd to the 10th; variety for home use or shipping.

VICTORIA.—A large, round fruit; color yellow; flesh yellow, juicy; freestone; fairly productive; suitable for south sections of the state; ripens June 23rd.

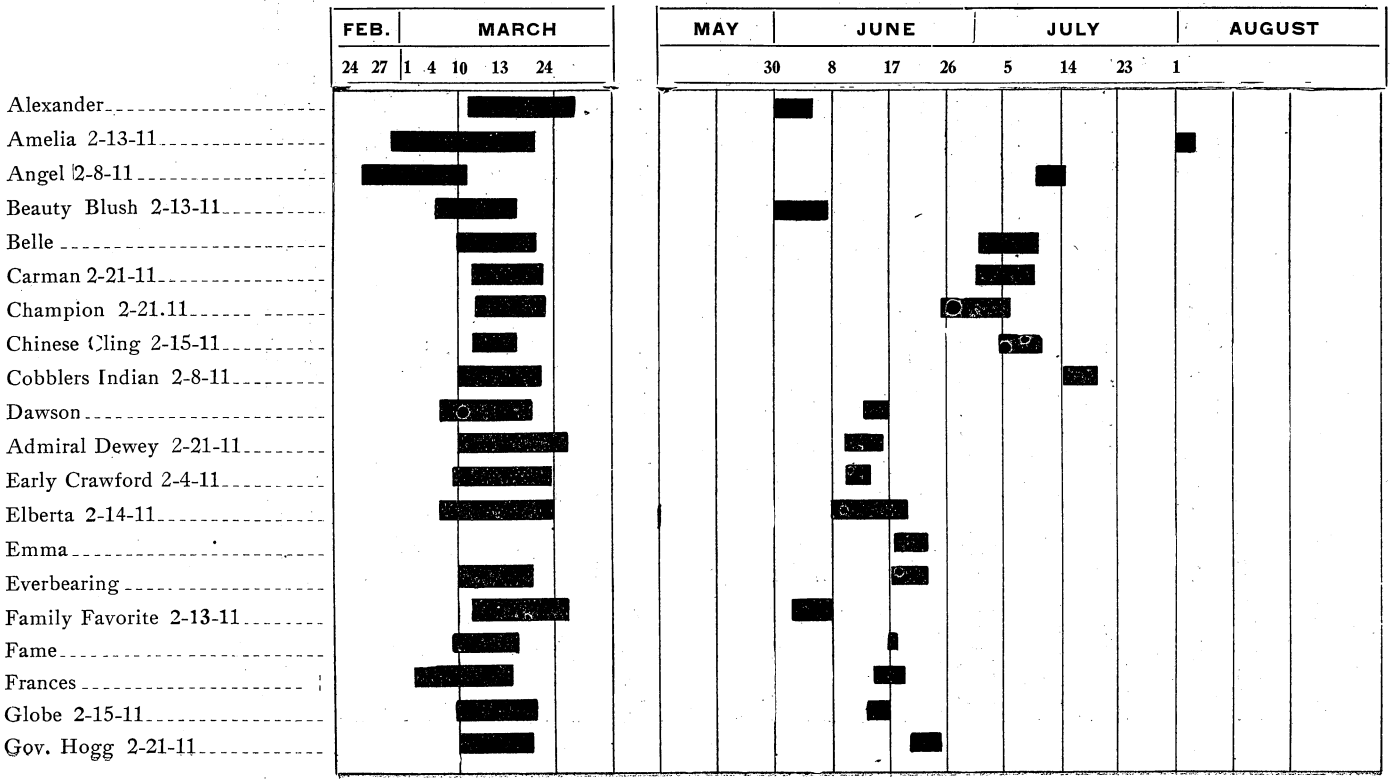
WADDELL.—A low open spreading tree, hardy but not vigorous; leaves medium to large; fruit medium to large; color yellow with pink patches; flesh white, firm and juicy; very productive; an excellent shipper; recommended for general planting; ripe June 28th to July 2nd.

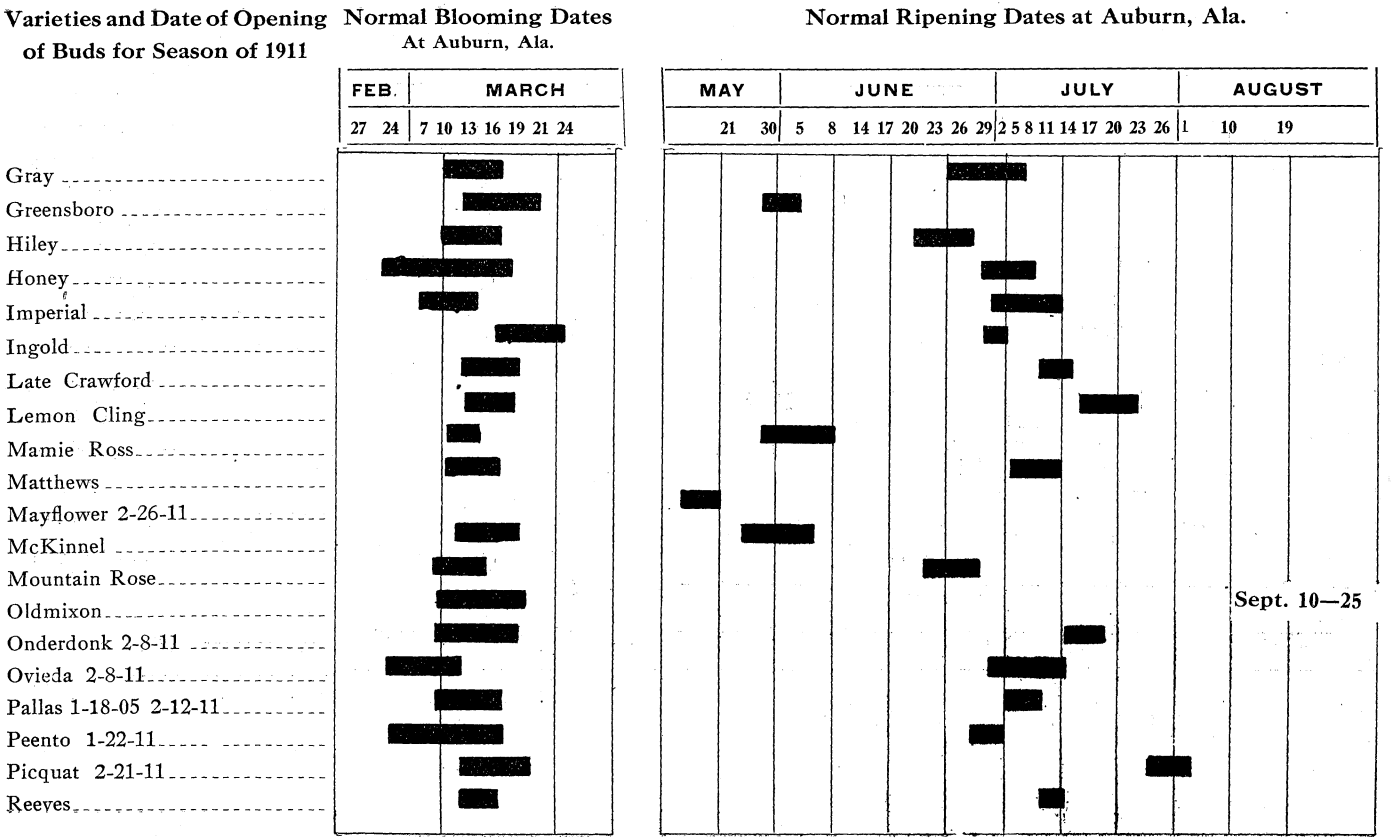
WALDO.—Fruit medium sized; roundish oblong; color light yellow, dark red in sunlight; flesh yellowish white, red at pit; sweet and of good quality; freestone; suitable for planting in south portion of state with the others of the Peento group; ripens June 16th to 24th.

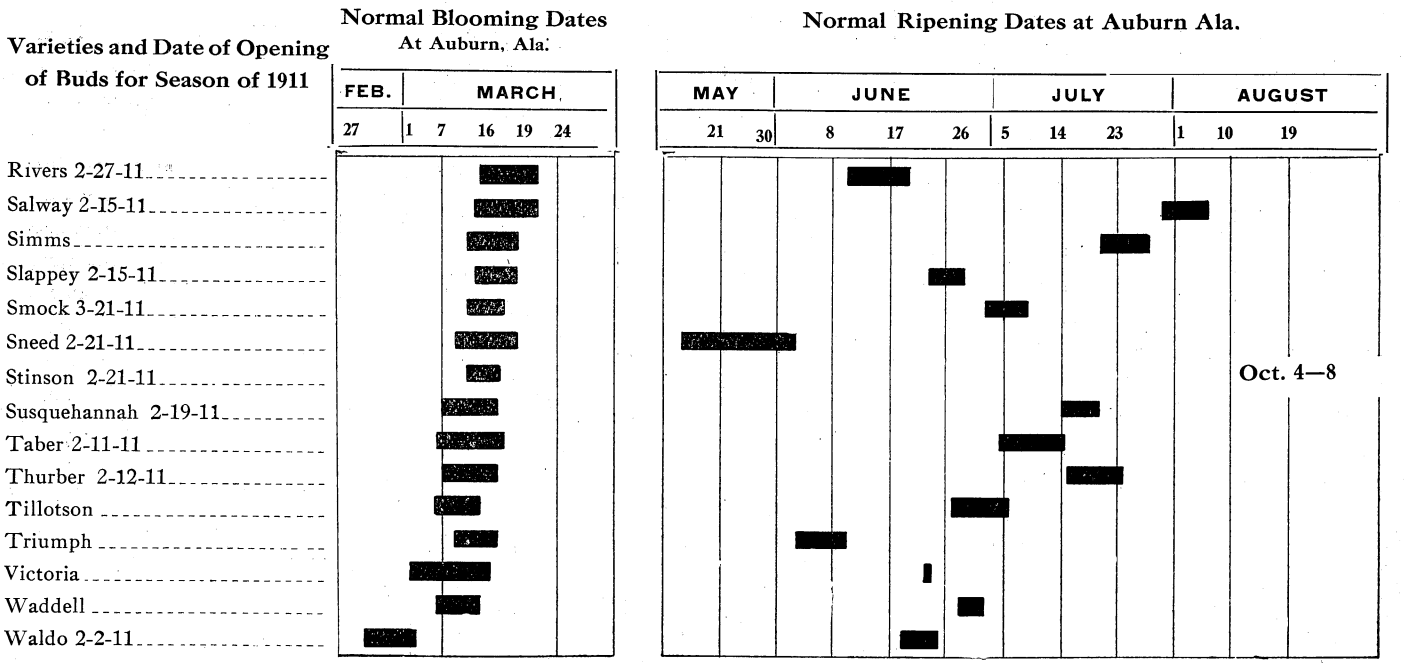
Varieties and Date of Opening of Buds for Season of 1911

Normal Blooming Dates
At Auburn, Ala.

Normal Ripening Dates at Auburn, Ala.




Varieties and Date of Opening of Buds for Season of 1911
Normal Blooming Dates
At Auburn, Ala.
Normal Ripening Dates at Auburn, Ala.
FEB.
MARCH
27 24 7 10 13 16 19 21 24
MAY
JUNE
JULY
AUGUST
21 30 5 8 14 17 20 23 26 29 2 5 8 11 14 17 20 23 26 1 10 19
Gray
Greensboro
Hiley
Honey
Imperial
Ingold
Late Crawford
Lemon Cling
Mamie Ross
Matthews
Mayflower 2-26-11
McKinnel
Mountain Rose
Oldmixon
Onderdonk 2-8-11
Ovieda 2-8-11
Pallas 1-18-05 2-12-11
Peento 1-22-11
Picquat 2-21-11
Reeves
Sept. 10—25


Varieties and Date of Opening of Buds for Season of 1911
Normal Blooming Dates
At Auburn, Ala.
FEB.
MARCH
27
1
7
16
19
24
Rivers 2-27-11
Salway 2-15-11
Simms
Slappey 2-15-11
Smock 3-21-11
Sneed 2-21-11
Stinson 2-21-11
Susquehannah 2-19-11
Taber 2-11-11
Thurber 2-12-11
Tillotson
Triumph
Victoria
Waddell
Waldo 2-2-11
Normal Ripening Dates at Auburn Ala.
MAY
JUNE
JULY
AUGUST
21
30
8
17
26
5
14
23
1
10
19
Oct. 4—8

Charts Showing Maximum and Minimum Temperatures Recorded by the Horticultural Department at Auburn, Ala., for the Years 1904-1911, Inclusive, During the Peach Blooming Period.

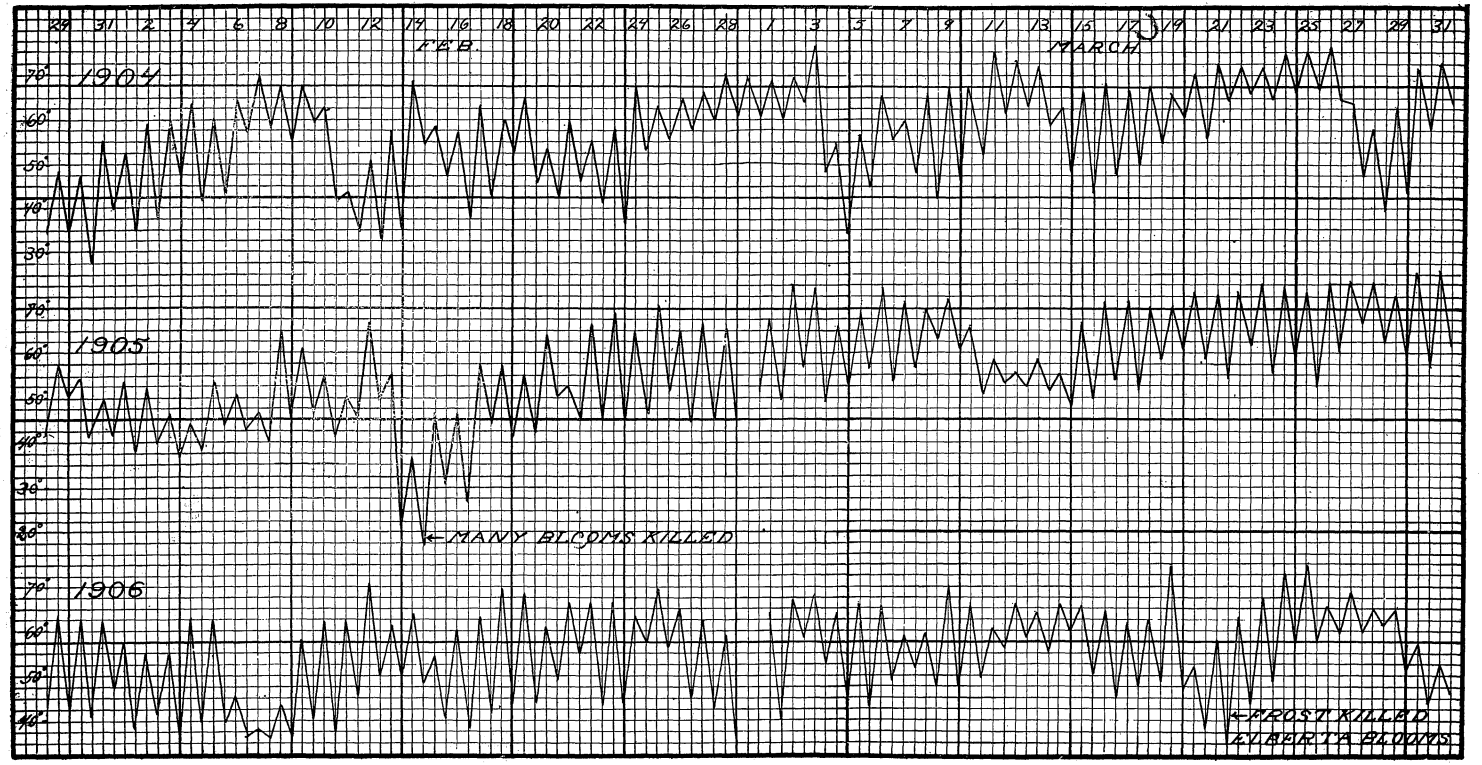
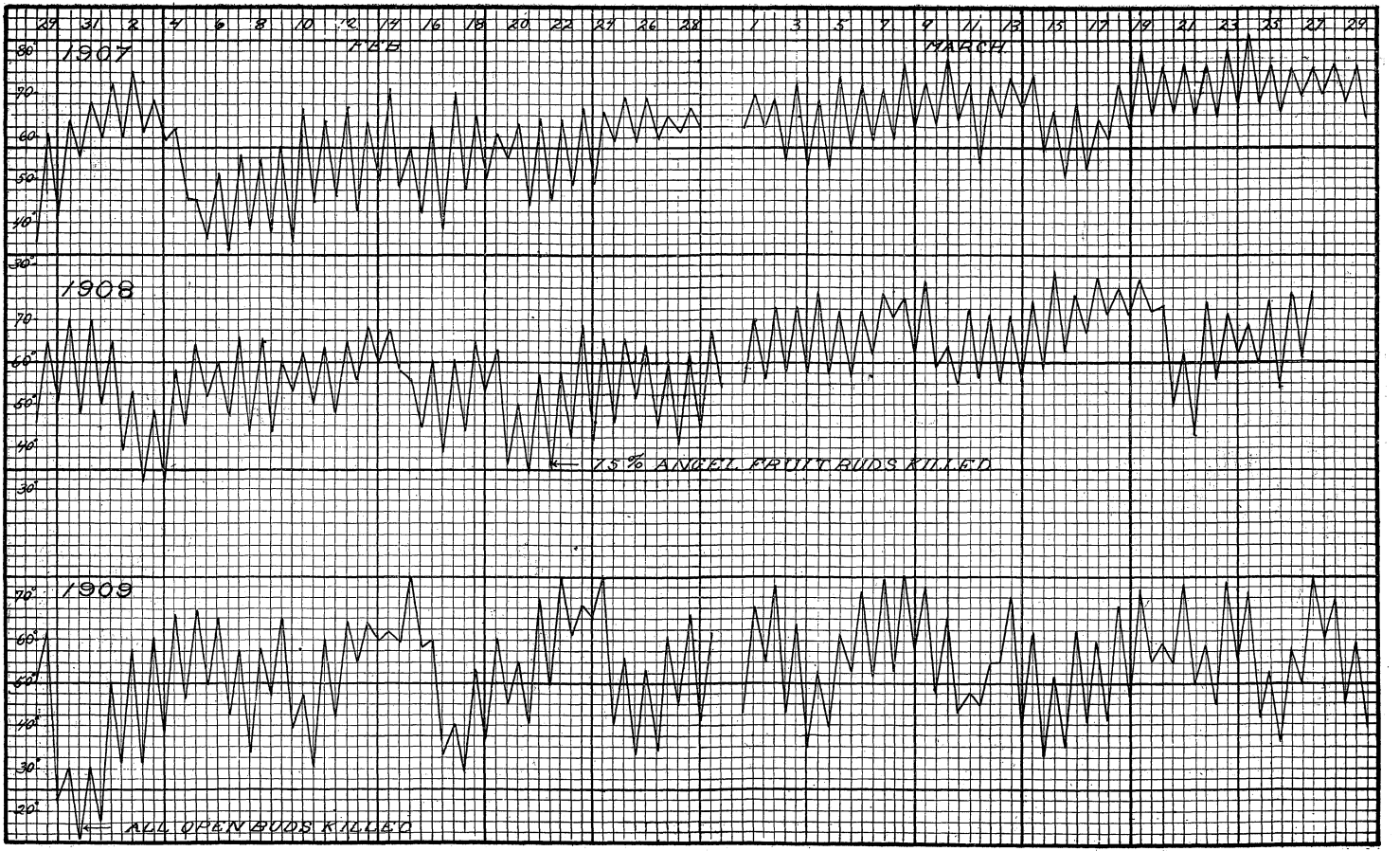


Fig. 4.


1907
FEB
MARCH
1908
← 15% ANGEL FRUIT BUDS KILLED
1909
← ALL OPEN BUDS KILLED

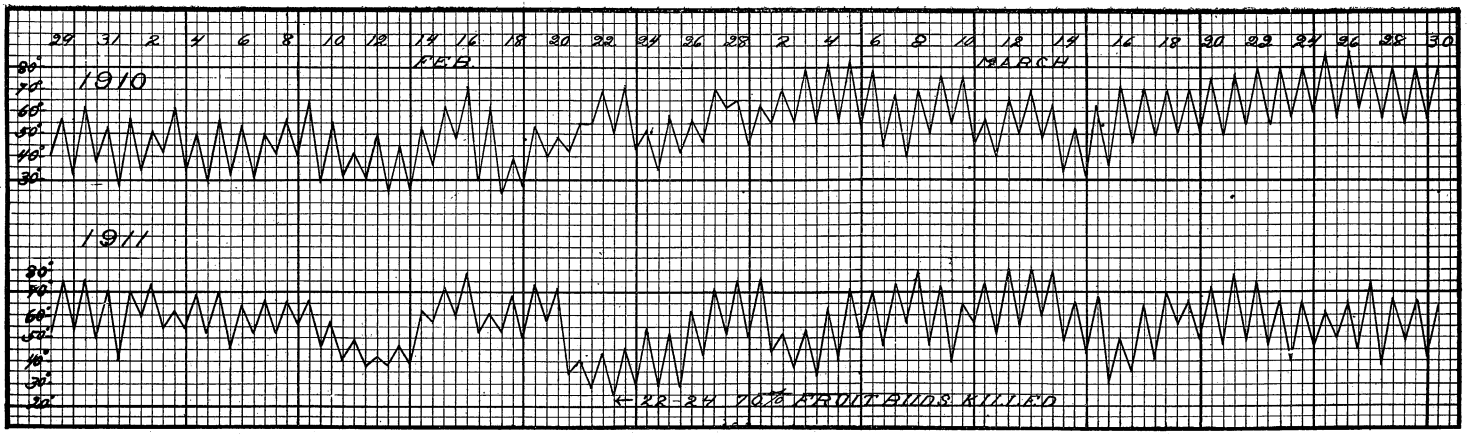


Fig. 6.

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